In the Claims:

1. (Currently Amended) A method of characterizing a sample surface having a surface anomaly region, the method comprising:

profiling the sample surface to generate surface characteristic data that includes data indicative of a surface depth;

generating a histogram of a number of occurrences of the surface depth based on said profiling step; and

measuring a surface anomaly in the surface anomaly region based generally only on said generating step.

2. (Original) The method of Claim 1, further including the step of selecting a zone of interest from the surface characterization data.

3. (Original) The method of Claim 2, wherein the zone of interest includes the surface anomaly region.

4. (Original) The method of Claim 3, wherein the surface anomaly region includes one of erosion and dishing.

5. (Original) The method of Claim 4, wherein the dishing is a single dishing.

6. (Original) The method of Claim 1, wherein the histogram includes a first peak corresponding to a generally planar portion of the sample surface, and a second peak corresponding to the surface anomaly.

7. (Original) The method of Claim 6, wherein said measuring step includes determining a distance between the first and second peaks.

8. (Original) The method of Claim 7, wherein the distance is indicative of the depth of the surface anomaly.

9. (Original) The method of Claim 6, wherein the surface anomaly region includes a plurality of surface anomalies, and wherein the histogram includes a third peak corresponding to a different surface anomaly, and wherein said measuring step includes determining a distance between the second and third peaks.

10. (Original) The method of Claim 1, further including the step of smoothing the histogram.

11. (Original) The method of Claim 10, wherein said smoothing step includes using a Gaussian filter.

12. (Original) The method of Claim 1, further comprising the step of leveling the surface characteristic data.

13. (Original) The method of Claim 1, wherein the histogram includes a first peak corresponding to a first depth associated with the surface characterization data, and a second peak corresponding to a second depth associated with the surface characteristic data.

14. (Original) The method of Claim 13, wherein the first depth corresponds to a generally planar portion of the sample surface, and the second depth corresponds to the surface anomaly.

15. (Original) The method of Claim 14, wherein the sample includes a metal-filled trench and the surface anomaly is associated with the trench.

16. (Previously Presented) The method of Claim 15, wherein the surface anomaly is negatively eroded metal in the trench.

17. (Currently Amended) A method that measures dishing values and erosion values associated with topography data generated by scanning a semiconductor surface to obtain surface profile data comprises the steps of:

(A) generating a histogram of a number of occurrences of a surface depth associated with a portion of the surface profile data corresponding to a first zone of interest~~, wherein the surface profile data includes data indicative of a depth of the surface~~; and

(B) smoothing the histogram of said generating step to produce a smoothed curve having a peak corresponding to one of a dishing value and an erosion value.

18. (Original) The method of Claim 17, further including the step of repeating steps (A) and (B) relative to a plurality of additional zones of interest so as to produce smoothed curves including data relating to a corresponding dishing value or erosion value or both for each of the plurality of additional zones of interest.

19. (Original) The method of Claim 17, further including the step of leveling the surface profile data prior to step (A).

20. (Original) The method of Claim 17, further including the step of filtering the histogram after step (A) and prior to step (B).

21. (Original) The method of Claim 17, wherein the first zone of interest includes dishing and erosion data, and wherein the smoothed histogram includes first, second and third peaks corresponding to a reference surface, an erosion value and a dishing value, respectively.

22. (Original) The method of Claim 21, wherein a corresponding distance between select pairs of said first, second and third peaks is indicative of a corresponding one of the dishing value and the erosion value.

23. (Previously Presented) A method for measuring dishing values and erosion values of a semiconductor surface by scanning the surface to obtain surface profile data that contains either dishing data or erosion data or dishing and erosion data, all referenced to surface data, wherein the improvement comprises the steps of:

(A) leveling the surface profile data, wherein the surface profile data is three-dimensional;

(B) generating a histogram of a portion of the leveled surface profile data corresponding to a first of a plurality of zones of interest;

(C) smoothing the histogram of said generating step to produce a smoothed curve having a maximum value corresponding to an erosion value or a dishing value; and

(D) repeating steps (B) and (C) relative to each of the remainder of the plural zones of interest, to produce smoothed curves corresponding to an erosion value or a dishing value or both for each of the remainder of the plural zones of interest.

24. (Original) The improved method of Claim 23, wherein the first zone of interest includes dishing and erosion values such that said smoothing step produces a smoothed curve having first and second maximum values corresponding to the dishing and erosion values, respectively.

25. (Previously Presented) A method of characterizing a sample surface having a surface anomaly region, the method comprising:

profiling the sample surface to generate surface characteristic data;

generating a histogram based on said profiling step;

measuring a surface anomaly in the surface anomaly region based on said generating step; and

wherein the histogram includes a first peak corresponding to a generally planar portion of the sample surface, and a second peak corresponding to the surface anomaly.

26. (Previously Presented) A method of characterizing a sample surface having a surface anomaly region, the method comprising:

profiling the sample surface to generate surface characteristic data;

generating a histogram based on said profiling step;

measuring a surface anomaly in the surface anomaly region based on said generating step; and

wherein the histogram includes a first peak corresponding to a first depth associated with the surface characterization data, and a second peak corresponding to a second depth associated with the surface characteristic data.

27. (Previously Presented) A method that measures dishing values and erosion values associated with topography data generated by scanning a semiconductor surface to obtain surface profile data comprises the steps of:

(A) generating a histogram of a portion of the surface profile data corresponding to a first zone of interest, wherein the surface profile data is three-dimensional;

(B) smoothing the histogram of said generating step to produce a smoothed curve having a peak corresponding to one of a dishing value and an erosion value; and

(C) wherein the first zone of interest includes dishing and erosion data, and wherein the smoothed histogram includes first, second and third peaks corresponding to a reference surface, an erosion value and a dishing value, respectively.

28. (Previously Presented) The method of claim 1, wherein said profiling step is performed using a probe-based instrument.

29. (Previously Presented) The method of claim 28, wherein the probe-based instrument is an atomic force microscope movable in a direction generally perpendicular to the sample surface.

30. (Previously Presented) The method of claim 1, wherein said profiling step is performed using a probe-based instrument, and the surface characteristic data is used to produce indicative of a three-dimensional image.

31. (Previously Presented) The method of claim 30, wherein the probe-based instrument is an atomic force microscope.

32. (Previously Presented) The method of claim 17, wherein the surface characteristic data is generated using a probe-based instrument.

33. (Previously Presented) The method of claim 23, wherein the surface characteristic data is generated using a probe-based instrument.